



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,894	11/26/2003	Prathyusha K. Salla	132958-3/YOD (GEMS:0263)	1160
68174	7590	03/27/2009	EXAMINER	
GE HEALTHCARE c/o FLETCHER YODER, PC P.O. BOX 692289 HOUSTON, TX 77269-2289			MEHTA, PARIKHA SOLANKI	
			ART UNIT	PAPER NUMBER
			3737	
			MAIL DATE	DELIVERY MODE
			03/27/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/723,894	Applicant(s) SALLA ET AL.	
	Examiner PARIKHA S. MEHTA	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 November 2008.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-32 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-32 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1-32 recite "motion compensation factors" which were not described in the disclosure in sufficient detail such that one of ordinary skill in the art would be reasonably apprised of how to use and make the claimed invention. The specification lacks any and all specific description of exactly what a motion compensation factor is, or precisely how it is derived, other than the generalized statement that the determination of the factors "may involve modeling the anticipated motion" (Specification p. 18 paragraph 3). For the purposes of further examination herein, Examiner interprets "motion compensation factor" to mean any quality or characteristic related to motion of the imaged objects.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner

Art Unit: 3737

to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohning et al (PC-Based System for Retrospective Cardiac and Respiratory Gating of NMR Data. *Magnetic Resonance in Medicine*. Vol. 16: p. 303-316. 1990), hereinafter Bohning (1990), in view of Keegan et al (Subject-specific Motion Correction Factors for Magnetic Resonance Coronary Angiography. *International Workshop on Medical Imaging and Augmented Reality*. p. 67-71. 2001), hereinafter Keegan (2001).

Bohning (1990) teaches a method and system of NMR imaging including means and steps for acquiring motion data for the heart and lungs or diaphragm ("two or more types of organs", wherein both the lungs and diaphragm constitute respiratory organs) using one or more types of electrical or non-electrical sensors separate from the imaging device, wherein the image and motion data are concurrently acquired, as well as means and steps for processing the motion data to extract two retrospective gating points, processing the image data based on the gating points, and displaying or storing an image accordingly (Abstract, p. 304 paragraph 1, p. 306 paragraph 6). Although Bohning (1990) does not expressly teach means and steps for reconstructing the image data, such elements and steps are considered to be inherent to the reference as it would not otherwise be possible to display the NMR data as the reference teaches.

Bohning (1990) does not teach means and steps for extracting a compensation factor from the motion data, or for using such compensation factor to process the image data. In the same field of endeavor, Keegan (2001) teaches that the derivation of a subject-specific motion correction factor from diaphragm motion data is useful for more accurately correcting image data for motion artifact (Abstract). It would have been obvious to one of ordinary skill in the art at the time of invention to have modified Bohning (1990) to include the elements, steps and computer routine of Keegan (2001) for calculating a motion compensation factor from the motion data and processing the images according to such factor, in view of the teachings of Keegan (2001).

6. Claims 9-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohning (1990) and Keegan (2001) in view of Rogers (US Patent No. 5,477,144), hereinafter Rogers ('144), previously of record.

Art Unit: 3737

Regarding claims 9-24, Bohning (1990) and Keegan (2001) teach all features of the present invention as previously discussed for claims 1-8. Bohning (1990) and Keegan (2001) do not provide non-electrical sensors for acquiring the cardiac motion image data.

In the same field of endeavor, Rogers ('144) provides a method and system for retrospectively-gated cardiac MR imaging with motion artifact correction, including the synchronization of respiratory motion data with cardiac motion data, as acquired by a pressure transducer, an acoustic microphone, a piezoelectric crystal transducer, all of which are non-electrical (col. 5 lines 53-63). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method and system of Bohning (1990) and Keegan (2001) to substitute the non-electrical cardiac motion sensors provided by Rogers ('144), in order to minimize interference between the imager and cardiac sensors.

Regarding claims 25-32, the combination of Bohning (1990), Keegan (2001) and Rogers ('144) as applied to claims 9-24 would yield the claimed invention having both electrical and non-electrical cardiac motion sensors if the sensors of Rogers ('144) were included with, instead of substituted for, the sensors of Bohning (1990) and Keegan (2001). It would have been obvious to one of ordinary skill in the art at the time of invention to augment the system and method of Bohning (1990) and Keegan (2001) by adding the non-electrical sensors of Rogers ('144) in order to obtain additional motion data to confirm the results obtained by the electrical sensors of Bohning (1990) and Keegan (2001).

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 3737

8. Claims 1-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 and 17-24 of copending Application No. 10/723,857. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are merely broader than those of the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claims 17-32 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 17-32 of copending Application No. 10/723,857, in view of Rogers (US Patent No. 5,477,144). Although the conflicting claims are not identical, they are not patentably distinct from each other. Claims 17-32 of the co-pending application recite all limitations of claims 17-32 of the present invention, with the exception of specifying that the imager is an MR system and that the non-electrical sensor(s) is used to acquire cardiac motion data. In the same field of endeavor, Rogers ('144) teaches a system and method for retrospectively-gated cardiac MR imaging, using non-electrical sensors to acquire cardiac motion data (col. 5 lines 53-63). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and methods of the co-pending application to employ an MR imager and non-electrical cardiac sensors, in order to eliminate interference between the magnetic field and the sensors, in view of the teachings of Rogers ('144).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

10. Applicant's arguments with respect to claims 1-32 have been considered but are moot in view of the new ground(s) of rejection.

11. Applicant's arguments are not sufficient to overcome the previous rejection of claims 1-32 under 35 U.S.C. 112, second paragraph. Examiner maintains that a "motion compensation factor" is not such a standard element known in the art such that one of ordinary skill would be reasonably apprised of what Applicant considers to be such a factor conceived of within the present invention, nor would one of ordinary skill in the art be reasonably apprised of how to derive or acquire such a factor. The term was examined in view of the prior art for the purposes of further examination as set forth in the previous rejection; specifically, the term was interpreted as meaning, very broadly, "any quality or characteristic

Art Unit: 3737

related to motion of the imaged objects". Examiner maintains that Applicant could not possibly have conceived of and successfully used with the present invention each and every possible quality or characteristic related to motion of the imaged objects. Accordingly, the rejection is found to be proper and is reiterated herein accordingly.

12. The previous rejection of claims 1-4, 9-12, 17-20 and 25-28 under 35 U.S.C. 101 is hereby vacated in view of recent case law, established after the previous Office Action, which holds that a method may be deemed statutory if it results in a physical transformation, or if the method is sufficiently tied to another statutory class of invention (*In re Bilski*; No. 2007-1130; Fed Cir. 30 Oct 2008 *en banc*). The methods of the present claims are sufficiently tied to the sensors recited therein.

13. Applicant's amendments are sufficient to overcome the previous objections to the specification, which are hereby vacated accordingly.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3737

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit

3737

/Parikha S Mehta/

Examiner, Art Unit 3737